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ABSTRACT

Designed to provide teacher-trainees with practice before entering a real classroom, a microcomputer-based simulation of classroom interaction became a key component in the curriculum of two introductory methods courses offered at the University of Virginia. Twenty-two participants used IBM-PC equipment to complete two skill modules. Each module included a series of simulated lessons followed by a debriefing session during which individualized counseling on skill attainment was given. In the first module, trainees were encouraged to inform pupils whether their content-based answers to spelling questions were correct or not. In the second module, trainees were encouraged to adjust the pace of their questioning on the basis of whether they were introducing or reviewing content-related material. The instructional strategies could be determined by the teacher-trainee, and the interactions between the teacher and pupil (computer simulated) was in the form of spoken dialog. Instruction for the participants was based on a skill mastery approach to learning. The teacher-trainee response to classroom simulation was positive; 100% of participants reported enjoying the post-session debriefing and performance appraisal by a counselor. Future plans include continuation and expansion of simulation methods with opportunities given for participants to experience inappropriate classroom behavior in order to gain practice in effective management techniques. (JB)

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Use of a Microcomputer-Based Simulation To Enrich Teacher Training[1]

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During the Spring 1985 semester, a microcomputer-based simulation of classroom interaction became a key component in the curriculum of two introductory methods courses offered at the Curry School of Education at the University of Virginia. Extensive research with a prototype of the simulation had revealed it's promise for providing teacher-trainees with essential practice in effective teaching before entering the real classroom (Kauffman, Strang & Loper, in press. Loper, Strang, Richards, & Reeve, 1984; Strang & Loper, 1983; Strang & Loper, 1983-84; Strang, Badt, Loper & Richards, 1985). Expansion of the the capabilities of the prototype simulation (Strang & Loper, 1985) enabled smooth integration of the simulation into standard instructional curriculum.

System Description

System hardware centers on an IBM-PC equipped with two independently operating video displays. During a typical session, a teacher trainee is asked to teach a list of spelling words to a class of simulated pupils who are represented as names displayed on a video monitor. As is typical in a real classroom, the instructional strategy is teacher-determined and interactions between the teacher and pupils focus on spoken dialogue.

Realistic pupil responses to the teacher are achieved by linking skillful operator coding with rapidly executing software routines. Whenever the teacher speaks, a coder-operator is cued by a screen menu (not visible to the teacher) to key a two- to five-character code into the computer. This efficient code indicates the pupil(s) to whom the teacher is speaking, the

intent of the teacher's message and, if appropriate, the specific lesson content (spelling word). For teacher messages which solicit pupil content-based answers, the computer instantaneously selects an appropriate pupil reply from a pool of up to 1200 choices and displays a syntactically complete answer on the coder-operator's screen (e.g., "To make the vowel 'i' long in ADMIRE, add a silent 'e'"). Functioning as the voice of the pupil, the coder-operator recites the reply to the teacher. The simulation's pupil reply feature operates at such speed that a natural pupil-teacher dialogue can be maintained throughout the teaching session.

The microcomputer creates a complete sequential record of all verbal exchanges that occur during a training session. In addition to the previously described coding parameters, this record also includes lapse time measures for individual dialogue components and the simulated pupils' response accuracy. At the conclusion of each session, the resulting information pool is tapped to produce a wide variety of individually tailored feedback displays and hardcopy profiles which are used during post-session counseling.

Use of the Simulation in Teacher Training Courses

Twenty-two teacher-trainees from two introductory methods courses completed two skill modules. Each module included a series of simulated lessons followed by a debriefing during which individualized counseling on skill attainment was given.

In the first module, trainees were encouraged to inform pupils whether their content-based answers were correct or

incorrect. In the second module, trainees were encouraged to adjust the pace of their question-asking on the basis of whether they were introducing or reviewing content-related material.

During each module's training component, the simulated pupils were programmed to answer accurately when the teacher correctly used the targeted skill. For example, during feedback training, if the teacher furnished feedback on accuracy following a pupil's content-based answer, the pupil would be more likely to respond correctly to the next content-based question. This simple reward system was sufficient to induce many teacher-trainees to employ the targeted skill. Those requiring further direction were aided during subsequent training sessions by computer-generated prompts. For example, in the pacing module, an animated graphical display assisted the teacher to adjust and then to maintain the appropriate pace in asking questions. Visual prompts were removed when skill mastery had been achieved and teacher-trainees then had the opportunity to demonstrate mastery under the original training condition.

In attaining skill mastery, teacher-trainees participated in from three to eight training sessions offered on from two to four separate days. Depending upon the particular training goal, session length varied from 5 to 20 minutes. Following every training session, each teacher received approximately 5 minutes of debriefing personalized by the inclusion of precise performance feedback.

After successfully completing a training module, each teacher-trainee received a more extensive debriefing from an experienced counselor. This review of the trainee's progress

toward skill mastery was greatly enhanced by the inclusion of several printed records produced during the training. A Personalized Feedback Profile presented tabulations of relevant key teaching behaviors (e.g. frequencies of giving feedback after a pupil replied correctly and incorrectly, percent of time spent teaching the class as a whole vs. time spent with individual students). An Event Record detailed the simulation session: listed for each teacher-pupil interaction were the name of the pupil with whom the teacher interacted, the length of the interaction, the response requested by the teacher of the pupil, the accuracy of the pupil, and the particular spelling word being considered. The rich information provided by these products provoked lively and fruitful discussion about a student's own teaching style.

During the final class session of each of the two methods courses, each teacher-trainee was given an Individualized Summary Report Booklet which contained records both of personal progress achieved during the simulation training and of the total class' performance on the two training modules. The cumulative information stimulated the trainees to compare their personal teaching styles with those of their classmates.

Reactions from Teacher-Trainees

Results obtained from a series of questionnaires and informal interviews revealed widespread enthusiasm for the simulation experience. One-hundred percent of the teacher-trainees reported enjoying the post-session debriefings during which they reviewed their own performance with a counselor.

Eighty-Six percent of the trainees indicated that the pacing module helped them to better understand how to pace questions appropriately, and 91% of the students reported similar benefits for the feedback module. Ninety-one percent and 100% of the students reported being more confident of their pacing and feedback skill, respectively, as a result of the simulation training.

Students' anecdotal expressions paralleled the enthusiasm apparent in the more formal questionnaires. Typical written comments included:

- I really enjoyed the experience itself and the conference afterward. The whole experience built, actually renewed, my confidence about being competent to go into a classroom and do something worthwhile.
- I liked the feedback! The opportunity to see results on a computer printout really helps one become aware of his performance.
- I really liked seeing the graph. It helps to see the information rather than just hearing it.
- These simulations are helpful tools for instruction, but more importantly give the students a situation in which they can gain useful feedback on their teaching performance.

Future Course

Plans are underway to include simulation as part of the Education School curricula again next year. However, we look forward to offering students several new simulation

opportunities. Further expansion of the simulation will enable the depiction of inappropriate pupil behavior, giving student-teachers the rare opportunity to practice effective behavior management techniques before encountering genuine misbehavior. Other vital teaching skill areas being considered are accurate monitoring of pupil behavior, accurate self-monitoring, and persistence in allowing pupils time to respond to teacher-posed questions.

Through experience with the simulation, our future teachers will be able to approach the real classroom fortified with skillfulness and self-confidence nurtured through guided practice in a comfortable environment where mistakes can do no real harm.

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